The systems required must meet the following minimum requirements: **MINIMICRO PLUS with VSM**

CAMERAS

- Cameras shall include the following:
  Shatterproof lenses
  Omni Position
  Anti-Glare Glass
  Scratch resistant
  High Impact
  Microphones with built-in Noise Gate Omni Direction
  Moisture Proof
  Temperature resistant

- 520 TV Line Resolution
- Cameras must be fixed in cast metal vandal proof housing
- PeriOptic Wide Dynamic Lens
- CX3 Sony Chip Set Only
- Identify appropriate camera and lenses to have full view of bus areas (front, back, driver, stairwell section, and stop arm)
- Day/Night camera shall have built-in Infrared LEDs.
- Input image to DVR shall be Clear, Stable and Free of Vibration.
- Shall be mounted without brackets to Ceiling, Surface, Wall, or Side.
- Shall be available in various lens sizes range of 2.1mm to 25mm
- Must have 6PIN DIN waterproof connection

MOBILE DVR

- Footprint not to exceed (Width x Height x Depth) 4" x 2" x 8" and Weight not to exceed 1.61 lbs.
- The DVR shall have the capability to be installed at any angle, in an easily accessible location.
- The DVR supplied must record independently up to four channels of video and four channels of audio, with simultaneous recording.
- The DVR must have easy marking capabilities with an Event Push Button.
- The DVR should have protection from access of unauthorized personnel by not having any accessible controls or buttons on the DVR face and should offer a wireless remote control for easy set up and programming by any authorized personnel.
- The 2.5" Hard Drive shall have a minimum storage capacity of 160GB with maximum of 500GB. The Hard drive, must be "hot swappable (the hard drive may be removed and replaced with the power on and the DVR in operation without damage). The Hard Drive must be Tamper proof and lockable and in a shock resistant housing.
- The system must utilize a non-proprietary High Speed SATA Hard Drive
- The DVR must operate between 10-36 VDC and be connected with 18 gauge wire or larger, with an inline fuse and be internally and continually protected from power surges, spikes and reverse polarity.
- The DVR must offer a back-up battery that will save settings for a minimum of 10 years.
- The DVR must be equipped with an RS-232 Serial Port for future expansions. This port must be able to interface with any device that accepts serial communications. It must also include a LAN connection for wireless capability.
- The Camera Connectors on the DVR must be 6 pin DIN; with screw on connectors that include Audio, Video, Power and Ground with Water Proof connectors.
- The DVR unit must offer High and Low Temperature Protection
- The DVR must offer the latest MPEG4 and MJPEG compression technology providing motion picture quality video and be user selectable to ensure the best quality video.
- The DVR Frame Rate must offer 9 settings at 1, 3, 5, 7, 10, 12, 15, 30, 60 fps.
- The DVR unit must offer crisp video at 720 x 584 resolutions for DVD quality playback.

- The DVR Recording modes must be user selectable for Continuous, Motion or Alarm. In continuous mode, the storage capacity must not be impacted by motion.
- The DVR can automatically record over data files once the hours of audio/video capacity has been reached, and beginning with the oldest data first.
- The DVR On-board real time clock that operates independently of main power supply. Must adjust automatically for daylight savings time.
- The DVR must have eight sensor inputs for marking events, to include left turn, right turn, reverse, stop arm and amber lights. The DVR must have a Driver event marker button.
- The DVR display resolution must have full support for NTSC and PAL and be user selectable.
- The DVR must have a delay start, of not more than 10 seconds, for the system to boot up and begin recording upon activation of bus engine run switch, to allow for voltage stabilization.
- The DVR must have a delay stop to allow continued recording after the bus is turned off; and be user selectable to delay for 0, 5, 10, 20, 40 or 60 minutes.
- The DVR must offer fail safe, "System On" protection that includes a record light that will flash during the recording, a power light and camera light that will flash to indicate the unit is functioning properly, and an audible alarm that will sound if there is a hard drive failure.
- The DVR must be capable of setting and recording real time images and sound from 1 to 30 frames per second (fps) per channel.
- The DVR must be User Password protected; with defined security levels.
- The recorded video from the DVR must provide on-screen data of left turn, right turn, front door, rear door, amber lights, reverse, brake lights, stop arm, (from signal inputs) Vehicle identifier, date, time.
- The DVR System must have an integrated Passive GPS Module, which requires no outside subscription service. The On Screen data from the Passive GPS module must embed the Coordinates, Direction, and Speed onto the recorded video, and be synchronized with the camera(s).
- The Passive GPS must be compatible with software that can extract .gpx, NMEA, .kml and .gps data for a TeleAtlas Map Overlay.
- The DVR must include HOST and SLAVE USB connection for easy firmware upgrade and Laptop connection.
- The DVR must be capable of Wireless operation.
- The DVR must offer an Optional Inertia Sensor

- **Virtual Synchronized Mapping - VSM**

System must include Built-In VSM GPS – Virtual Synchronized Mapping, providing on-screen route tracking to identify movements of the vehicle on a digital street map, synchronized with the cameras views and embedded onto the recorded video of the DVR. Please note that providing and/or recording only the GPS coordinates does not meet this specification. The street map must be recorded onto a camera channel of the DVR to ensure synchronization with the cameras. When viewing the video, the map view must not require an internet connection and must include Licensed TeleAtlas embedded maps on the hardware to ensure accuracy.

Video Retrieval PC Playback Software and Archiving

- The software must offer retrieval of the latest MPEG4 and MJPEG compression technology (user selectable) providing motion picture quality, while offering greater storage capacity.
- The hard drive must offer a built-in reader and be able to be connected to the computer through a USB connection. The Video review shall be accomplished through this USB connection with the DVR Hard Drive and utilizing the supplied software. The USB connection from the PC must power the DVR Hard Drive.
- The software must be able to retrieve events downloaded directly on USB drive via USB 2.0 connections/port or direct connection to a laptop or desktop PC.
- Video review will require no other office hardware.
- The video transfer rates must be less than 1:1. The Bidder shall supply the transfer rate proposed with their system.

- The DVR must be equipped with a USB memory stick process to quickly review or download events from the on-board system.
- The Video retrieval or review must be secured through the use of proprietary software. The software must require user name and password entry and must offer court ready video files.
- The Video Review software must be user-friendly. It must allow for one screen viewing of all cameras, with options to select any single camera view. It must be able to copy video to a PC (user selectable by time frame). It must be able to create a JPEG, WMV or AVI files. The software must offer the capability to easily forward and view video and audio clips/frames as an attachment to an email. It must include options to play, stop, forward, reverse, pause, frame by frame forward, frame by frame reverse, beginning of video file, end of video file and volume control for audio. It must include camera selection buttons and a time slider.
- The video retrieval capability must be Plug N Play reading for fast file transfer, utilizing PC based file formats (with no additional hardware).
- The software must easily retrieve the "tag/mark" on the hard drive, search, pause/freeze and download captured events to a PC, USB flash drive or direct to DVD burner, or print frame by frame.
- All Video and Data must be able to be saved on the PC's hard drive, and/or transferred or copied to DVD, CD, VHS, and other forms of archiving.
- The supplied software must have the capability of tracking, with playback selections of inquiry by alarm, date, time and camera number.
- The software must have the following Video Quality settings: 16 Settings: four adjustment levels with four quality settings for each adjustment level
- The software must offer Display Modes of Single camera, QUAD, and 4x zoom

Maintenance and Software Upgrades

- The manufacturer will provide automatic software upgrades at no additional cost for minimum of two (2) Years.
- The bidder will provide contact(s) information for technical support.
- The DVR system must not require any additional Maintenance Support other than periodic testing for proper operation.

Installation

- The Bidder will supply the installation of all hardware (including accessories, cables, harnesses, etc.) and software to guarantee systems are fully functional and operational prior to acceptance of payment.
- The Bidder will provide a timeline for installation, testing and start-up.
- The Bidder will provide the number of dedicated technical support and/or installers for this project.
- The Bidder will include the training of Staff employees on the use of the system and certification on the installation.
- The System must be designed and supported by the manufacturer. The bidder must have experience installing and servicing Mobile Video Surveillance Systems on School Buses or Mass Transit Buses.

Warranty

- The bidder must offer a minimum of Three (3) year minimum Parts and Labor warranty on the complete system, including the DVR unit, cables, hard drive, and cameras.
- The bidder must supply extended warranty options.
- The bidder must supply all warranty information on the system in their bid response.
- The bidder must be authorized by the manufacturer to repair the equipment during the warranty period, if the warranty repairs are to be performed by the bidder.

Training and Technical Support

- The bidder shall supply complete user training on the system and its installation, including online and current manufacturer user manuals.
- The bidder will provide a toll free engineering support line and offer technical support at no charge, during the warranty period.